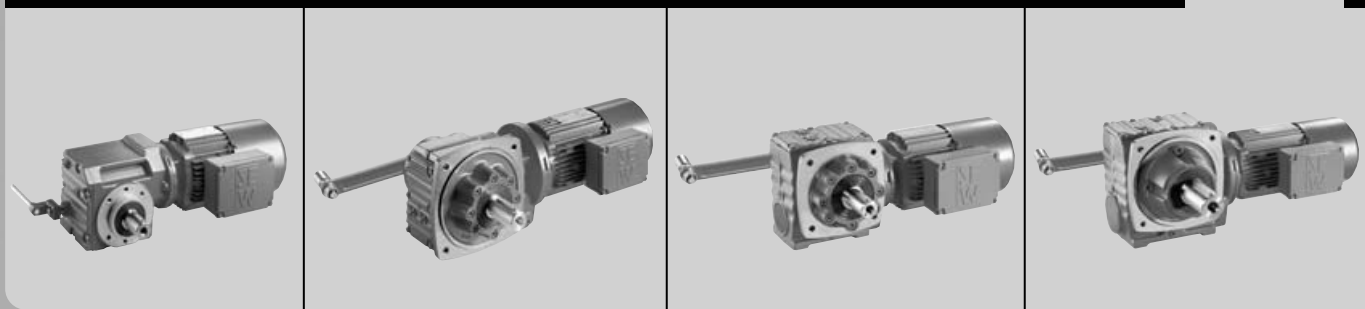
SEW EURODRIVE

Gear Units for Overhead Trolley Systems HW..., HS..., HK...

Edition

04/2003



Operating Instructions

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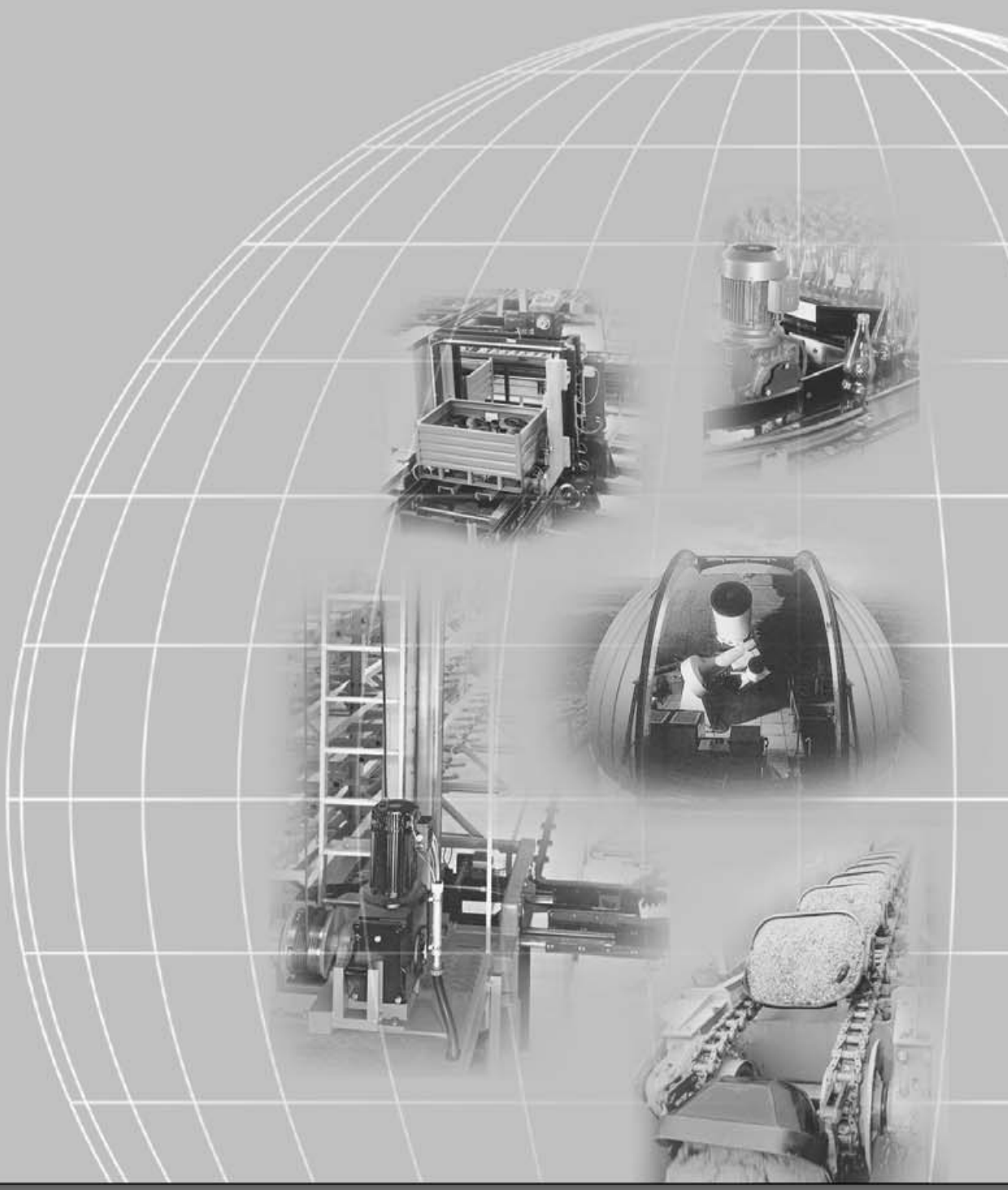

SEW-EURODRIVE

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1 Important Notes

Safety and warning instructions

Always follow the safety and warning instructions in this publication!

Electrical hazard
Possible consequences: Severe or fatal injuries.

Hazard
Possible consequences: Severe or fatal injuries.

Hazardous situation
Possible consequences: Slight or minor injuries.

Harmful situation
Possible consequences: Damage to the drive and the environment.

Tips and useful information.

A requirement of fault-free operation and fulfillment of any rights to claim under guarantee is that you adhere to the information in the operating instructions. Consequently, read the operating instructions before you start working with the drive!

The operating instructions contain important information about servicing and should be kept in the vicinity of the unit.

- **Adjust the lubricant fill volumes and position of the breather valve accordingly if you change the mounting position (see sections "Lubricants" and "Mounting Positions").**
- **Follow the instructions in Sec. "Mechanical Installation" / "Installing the gear unit"!**

Waste disposal

Please follow the current instructions:

- Housing parts, gears, shafts and anti-friction bearings of the gear units must be disposed of as steel scrap. The same applies to gray cast iron castings unless there are separate collection arrangements.
- Some worm gears are made of non-ferrous metals and must be disposed of accordingly.
- Collect waste oil and dispose of it correctly.

2 Safety Notes

Preliminary remarks

The following safety notes are principally concerned with the use of gear units. For operation of **gearmotors**, also refer to the safety notes for motors in the corresponding operating instructions.

Also take account of the supplementary safety notes in the individual sections of these operating instructions.

General information

During and after operation, gearmotors, gear units and motors have live and moving parts and their surfaces may be hot.

All work related to transport, storage, setting up/mounting, connection, startup, maintenance and repair may only be performed by trained personnel observing

- the corresponding detailed operating instruction(s) and wiring diagrams,
- the warning and safety signs on the gear unit/gearmotor,
- the specific regulations and requirements for the system and
- national/regional regulations governing safety and the prevention of accidents.

Severe injuries and damage to property may result from

- incorrect use,
- incorrect installation or operation,
- removal of required protective covers or the housing when this is not permitted.

Intended usage

These gearmotors/gear units are intended for industrial systems. They correspond to the applicable standards and regulations.

The technical data and the information about permitted conditions are to be found on the nameplate and in the documentation.

It is essential to observe all specified information!

Transport / storage

Inspect the delivery for any damage in transit as soon as you receive the delivery. Inform the transport company immediately. It may be necessary to preclude startup.

Tighten screwed in transport lugs firmly. They are only designed for the weight of the gearmotor/gear unit; do not attach any additional loads.

The installed lifting eyebolts are in accordance with DIN 580. The loads and regulations specified in that document must always be observed. If the gearmotor is equipped with two suspension eye lugs or lifting eyebolts, then both suspension eye lugs should be used for transport. In this case, the tension force vector of the slings must not exceed a 45° angle in accordance with DIN 580.

Use suitable, sufficiently rated handling equipment if necessary. Remove any transport fixtures before startup.

Installation / mounting

Follow the instructions in Sec. "Mechanical Installation"!

Startup / operation

Check the correct direction of rotation of the gearmotor. Listen for unusual grinding noises as the shaft rotates.

Secure the shaft keys for test mode without drive components. Do not render monitoring and protection equipment inoperative even for test mode.

Switch off the gearmotor if in doubt whenever changes occur in relation to normal operation (e.g. increased temperature, noise, vibration). Determine the cause; contact SEW if necessary.

Inspection / maintenance

Follow the instructions in Sec. "Inspection and maintenance"!

3 Mechanical Installation

3.1 Required tools / resources

- Set of spanners
- Mounting device
- Required compensating elements (shims, spacing rings)
- Fasteners for input and output elements
- Lubricant (e.g. NOCO® fluid)

Installation tolerances

Shaft end	Flanges
Diametric tolerance in accordance with DIN 748 • ISO k6 for solid shafts with $d_1 \leq 50$ mm • ISO m6 for solid shafts with $d_1 > 50$ mm • Center hole in accordance with DIN 332, shape DR..	Centering shoulder tolerance in accordance with DIN 42948 • ISO j6 at $b_1 \leq 230$ mm • ISO h6 at $b_1 > 230$ mm

3.2 Before you begin

The drive may only be installed if ...

- the entries on the nameplate of the gearmotor match the voltage supply system,
- the drive is undamaged (no damage caused by transport or storage) and
- it is certain that the following requirements have been fulfilled:
  - **with standard gear units:**
    ambient temperature according to the lubricant table in Sec. "Lubricants" (see standard), no oil, acid, gas, vapors, radiation, etc.
  - **with special versions:**
    drive configured in accordance with the ambient conditions
  - **with Spiroplan® HW30 gear units and HS.. helical-worm gear units:**
    no large external mass moments of inertia which could exert a retrodriving load on the gear unit

3.3 Preliminary work

The output shafts and flange surfaces must be thoroughly cleaned of anti-corrosion agents, contamination or such like (use a commercially available solvent). Do not let the solvent come into contact with the sealing lips of the oil seals – danger of damage to the material!

Extended storage of the gear unit

Gear units of the "extended storage" type have

- an oil fill suitable for the mounting position so the unit is ready to run (mineral oil CLP and synthetic oil CLPHC). You should still check the oil level before startup (see Sec. "Inspection/Maintenance" / "Inspection and maintenance of the gear unit")
- a higher oil level in some cases (synthetic oil CLP PG). Adjust the oil level before startup (see Sec. "Inspection/Maintenance" / "Inspection and maintenance of the gear unit").

3.4 Installing the gear unit

The gear unit or gearmotor may only be flange-mounted or installed in the specified mounting position on a level[1], vibration damping and torsionally rigid trolley structure. Do not tighten the mounting flanges and housing legs against one another and comply with the permitted overhung and axial loads!

Always use bolts of quality 8.8 for mounting gearmotors.

The oil checking and drain plugs as well as the breather valves must be freely accessible!

At the same time, also check that the oil fill is as specified for the mounting position (see Sec. "Lubricants" / "Lubricant fill quantities" or refer to the information on the nameplate). **Adjust the lubricant fill volumes accordingly in the event of a change in mounting position.**

Use plastic inserts (2-3 mm thick) if there is a risk of electrochemical corrosion between the gear unit and the driven machine (connection between different metals such as cast iron/stainless steel)! Fit the bolts with plastic washers! Ground the housing using the grounding bolts on the motor.

Installation in damp areas or in the open air

Drives are supplied in corrosion-resistant versions for use in damp areas or in the open air. Any damage to the paintwork (e.g. on the breather valve) must be repaired.

Gear unit venting

All gear units are delivered by SEW ready for the mounting position with the breather valve installed and activated. No venting is possible for Spiroplan® gear units and helical-worm gear units

- HW30 in mounting positions M3, M4 and M5
- HS40/41 in mounting positions M5

Exception:

Gear units for extended storage, pivoted mounting positions and mounting at an angle are delivered with a screw plug installed at the existing vent hole. The customer must replace the highest screw plug by the supplied breather valve on each individual gear unit before startup!

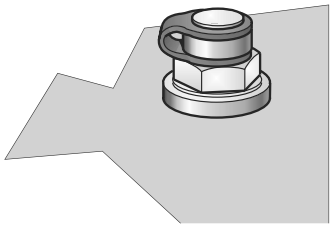
- **With gearmotors** for extended storage, pivoted mounting positions and mounting at an angle, the supplied breather valve is located in the **terminal box of the motor**.
- **Enclosed gear units** are delivered **without** a breather valve.

1 Maximum permitted flatness error for flange mounting (approximate values with reference to DIN ISO 1101): Flange 120...600 mm max. error 0.2 ... 0.5 mm

Activating the breather valve

As a rule, the breather valve is already activated at the factory. If this is not the case, remove the transport fixture from the breather valve before starting up the gear unit!

1. Breather valve with transport fixture
2. Remove the transport fixture
3. Activated breather valve



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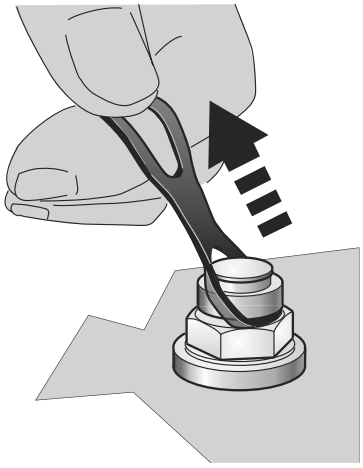

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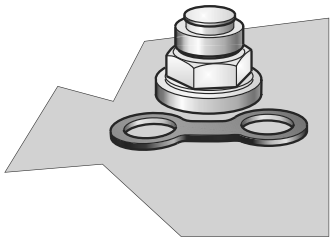

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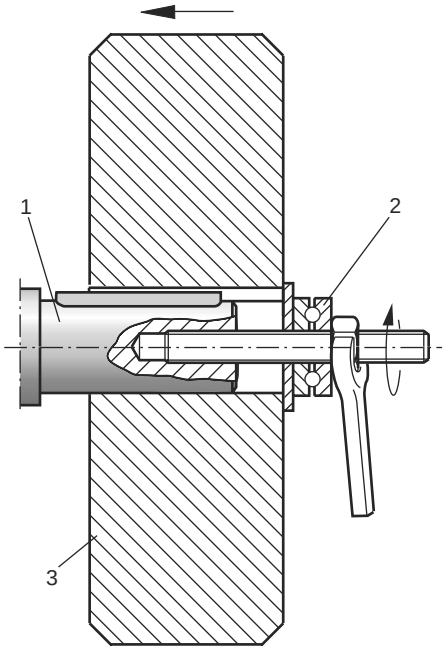
Painting the gear unit

Make sure that you carefully cover the breather valve and the oil seals if all or some of the drive surface is to be painted. Remove the strips of tape after completing the paint job.

3.5 Mounting

Mounting carrying wheels

The illustration below shows a sample mounting device for fitting a carrying wheel onto a gear shaft end. You may not have to install the thrust bearing on the mounting device.



1 = Gear shaft end
2 = Thrust bearing
3 = Carrying wheel

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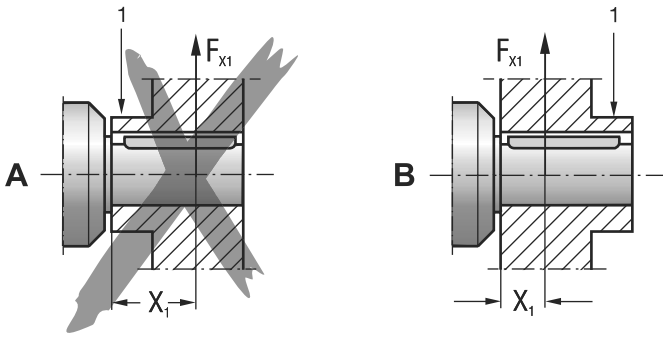
The following illustration shows the correct mounting arrangement **B** of a carrying wheel to avoid excessively high overhung loads.



1 = Wheel hub
A = Incorrect
B = Correct

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- Use only a mounting device for installation of the input and output elements. Use the center bore and the thread on the shaft end for positioning purposes.

- **Never drive carrying wheels, etc. onto the shaft end by hitting them with a hammer (damage to bearings, housing and the shaft!).**

Note:

Applying lubricant to the carrying wheel hub before mounting makes the job easier.

Input and output elements such as carrying wheels, etc. must be equipped with a touchguard!

Mechanical clutch

By actuating the clutch, it is possible to mechanically separate the output from the motor which continues to turn.

Engage the clutch at low output speeds with pole-changing motors and motors controlled by a frequency inverter.

3.6 Mounting the operating lever

With Spiroplan® HW30 gear units and HS40/41 helical-worm gear units, install the supplied operating lever into the existing sliding selector shaft and secure with a lock nut.

4 Startup

4.1 Startup of HW30 gear units and HS.. helical-worm gear units

Please note: The direction of rotation of the output shaft in series HS40/41 helical-worm gear units has been changed from CW to CCW; this is different to the SHB4 series. Change direction of rotation: Swap over two motor feeder cables.

Running-in period

The Spiroplan® HW30 gear unit and HS.. helical-worm gear units require a running-in period of at least 24 hours before reaching their maximum efficiency. A separate running-in period applies for each direction of rotation if the gear unit is operated in both directions of rotation. The table shows the average power reduction during the running-in period.

No. of starts	HS.. helical-worm gear unit		Spiroplan® HW30 gear unit	
	Power reduction	i range	Power reduction	i range
1 start	about 12%	about 55...220	about 15%	about 39...75
2 start	about 6%	about 20...75	about 10%	about 19.5...32.5
3 start	-	-	about 8%	about 14.33...16.33
4 start	-	-	about 8%	about 10.25
5 start	about 3%	about 6...25	about 5%	about 8.2

Self-locking

Spiroplan® HW30 gear units (1 and 2-start, i > 16.5) and the HS.. helical-worm gear units (1-start, i > 55) are statically self-locking. This means they cannot be moved when the trolley drive clutch is engaged, even when the brake is released. In the event of a malfunction, positioning or movement of the trolley is only possible when the clutch is disengaged.

4.2 Startup of HK.. helical-bevel gear units

No special startup instructions are required for helical-bevel gear units providing the gear units have been installed in accordance with Sec. "Mechanical Installation."

4.3 Clutch

The integrated, positive clutch enables the separation of the power flow between the gear unit final gear and the output shaft.

The clutch can be engaged

- at standstill of motor and output shaft
- with running motor in positioning or trailing mode (gear unit final gear and output shaft are turning approximately synchronously)
- at low output speed
  - in low-speed mode with pole-changing motors
  - at low frequency (10...15 Hz) when operating with a frequency inverter

5 Inspection and Maintenance

5.1 Inspection and maintenance intervals

Frequency	What to do
• Every 3000 machine hours, at least every 6 months	• Check the oil
• Depending on the operating conditions (see illustration below), at the latest every 3 years	• Change mineral oil
	• Renew the anti-friction bearing grease
• Depending on the operating conditions (see illustration below), at the latest every 5 years	• Change synthetic oil
	• Renew the anti-friction bearing grease
• The Spiroplan® HW30 gear unit has lubrication for life and is therefore maintenance-free	
• Varying (depending on external factors)	• Touch up or renew the surface/anticorrosion coating

5.2 Lubricant change intervals

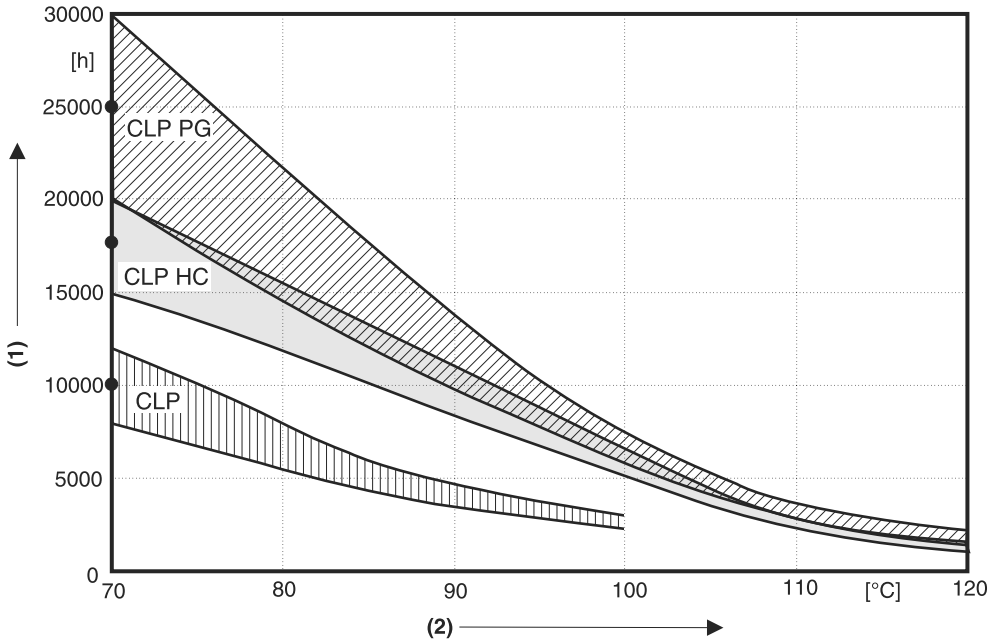

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Figure 1: Oil change intervals for standard gear units under normal ambient conditions

(1) Operating hours
(2) Sustained oil bath temperature
• Average value per oil type at 70 °C

Change the oil more frequently when operating special versions subject to more severe/aggressive ambient conditions!

5.3 Inspection and maintenance of the gear unit

Do not mix different synthetic lubricants and do not mix synthetic with mineral lubricants!

The standard lubricant is mineral oil except for Spiroplan® HW30 gear units.

The position of the oil level plug, the oil drain plug and the breather valve depends on the mounting position. Refer to the mounting position diagrams.

Checking the oil level

1. **Disconnect gearmotor from voltage supply and secure it to prevent unintentional restart!**

   Wait until the gear unit has cooled down – Danger of burns!
2. Refer to Sec. "Installing the gear unit" when changing the mounting position!
3. For gear units with oil level screw: Remove oil level plug, check the fill level and correct it if necessary. Reinstall the oil level plug.

Check the oil

1. **Disconnect gearmotor from voltage supply and secure it to prevent unintentional restart!**

   Wait until the gear unit has cooled down – Danger of burns!
2. Remove some oil from the oil drain plug.
3. Check the oil consistency
   - Viscosity
   - If you can see that the oil is heavily contaminated we recommend that you change the oil even if this is outside the service intervals specified in Sec. "Inspection and maintenance intervals."
4. For gear units with oil level plug: Remove oil level plug, check the fill level and correct it if necessary. Reinstall the oil level plug.

Changing the oil

Change the oil only when the gear unit is at operating temperature.

1. **Disconnect gearmotor from voltage supply and secure it to prevent unintentional restart!**

   Wait until the gear unit has cooled down – Danger of burns!

   Note: The gear unit must still be warm because the high viscosity of cold oil will make it more difficult to drain the oil correctly.
2. Place a container under the oil drain plug
3. Remove the oil level plug, breather plug/breather valve and oil drain plug
4. Drain the oil completely
5. Install the oil drain plug
6. Pour in new oil of the same type through the vent hole. If you are planning to change the oil type, first contact SEW customer service.
   - Pour in the correct amount of oil in accordance with the mounting position (see Sec. "Lubricant fill quantities") or as stated on the nameplate.
   - Check at the oil level plug
7. Reinstall the oil level plug
8. Reinstall the breather plug/breather valve

6 Malfunctions

6.1 Gear unit malfunctions

Malfunction	Possible cause	Remedy
Unusual, regular running noise	A Meshing/grinding noise: bearing damage B Knocking noise: irregularity in the gearing	A Check the oil (see Sec. "Inspection and Maintenance"), replace bearings B Contact customer service
Unusual, irregular running noise	Foreign bodies in the oil	• Check the oil (see Sec. "Inspection and Maintenance") • Stop the drive, contact customer service
Oil leaking[1] • from the gear unit cover • from the motor flange • from the motor oil seal • from the gear unit flange • from the output end oil seal	A Rubber seal on the gear cover plate leaking B Oil seal defective C Gear unit not vented	A Tighten the bolts on the gear cover plate and observe the gear unit. Oil still leaking: contact customer service B Contact customer service C Vent the gear unit (see Sec. "Mounting Positions")
Oil dripping from breather valve	A Too much oil B Drive operated in incorrect mounting position C Frequent cold starts (oil foams) and/or high oil level	A Correct the oil volume (see "Inspection and Maintenance") B Mount the breather valve correctly (see Sec. "Mounting Positions") and correct the oil level (see "Lubricants")
Output shaft does not turn although the motor is running or the input shaft is rotating	Connection between shaft and hub in gear unit is interrupted	• Check the clutch function • Send in gear unit/gearmotor for service

1 It is normal for small amounts of oil/grease to emerge from the oil seal during the running-in phase (24 hour running time, see also DIN 3761).

Please have the following information available if you require the assistance of our customer service:
- Nameplate data (complete)
- Nature and extent of the fault
- Time of occurrence and accompanying circumstances of the fault
- Presumed cause

7 Mounting Positions

7.1 General information on mounting positions

Mounting position designation

In the case of right-angle gearmotors for overhead trolley systems, SEW distinguishes between four mounting positions M1...M4.

In addition, mounting positions M5 and M6 are possible for HW30 and HS40 overhead trolley systems, and mounting position M5 for HS41 overhead trolley systems.

The following figure shows the spatial orientation of the gear unit in mounting positions M1...M6.

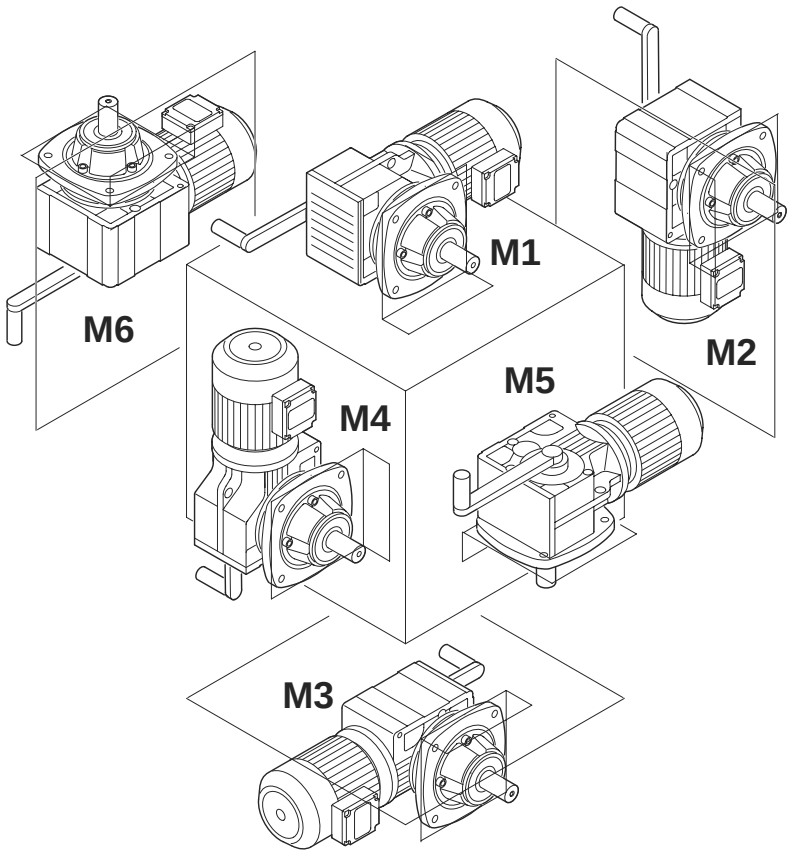

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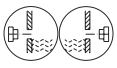
Figure 2: Diagram of mounting positions M1...M4 for overhead trolley systems

Symbols used

The following table shows which symbols are used in the mounting position sheets and what they mean:

Symbol	Meaning
	Breather valve
	Oil level plug
	Oil drain plug

Position of the motor terminal box and the cable entry

Possible positions of the terminal box are 0°, 90°, 180° or 270° as viewed onto the fan guard = B-side.

Furthermore, the position of the cable entry can be selected. The possibilities are "X" (= normal position), "1", "2" or "3".

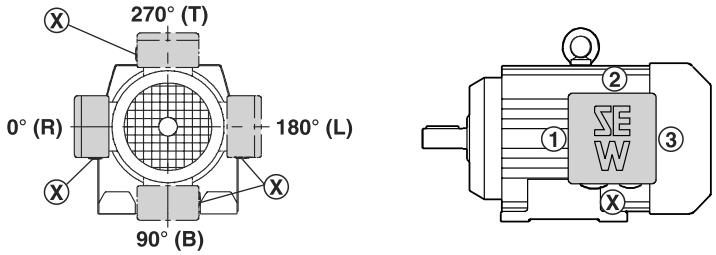


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Figure 3: Position of the terminal box and the cable entry

Unless other information is given regarding the terminal box, the 180° type with "X" cable entry will be supplied. We recommend selecting cable entry "2" with mounting position M3.

Important: Only cable entries **"X"** and **"2" are possible with the "DR63"** motor.

Exception: This restriction does not apply with the IS plug connector.

Position of the output shaft

Only output shaft position **A** is possible for HW30 and HS40/41 overhead trolley systems.

Output shaft positions **A** or **B** are possible for HK30/HK40/HK50/HK60 and HS50/HS60 overhead trolley systems.

Position of the output shaft:

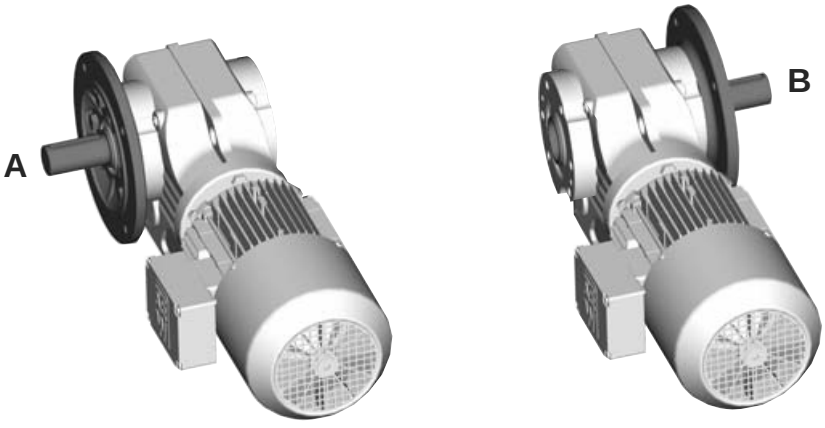

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Figure 4: Output shaft A or B

7.2 HW30 DR/DT..

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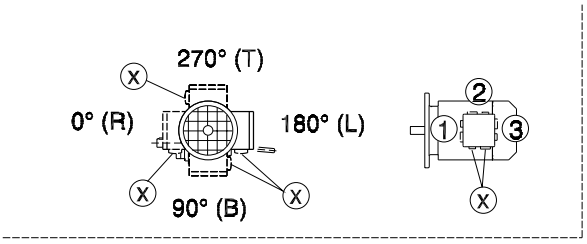
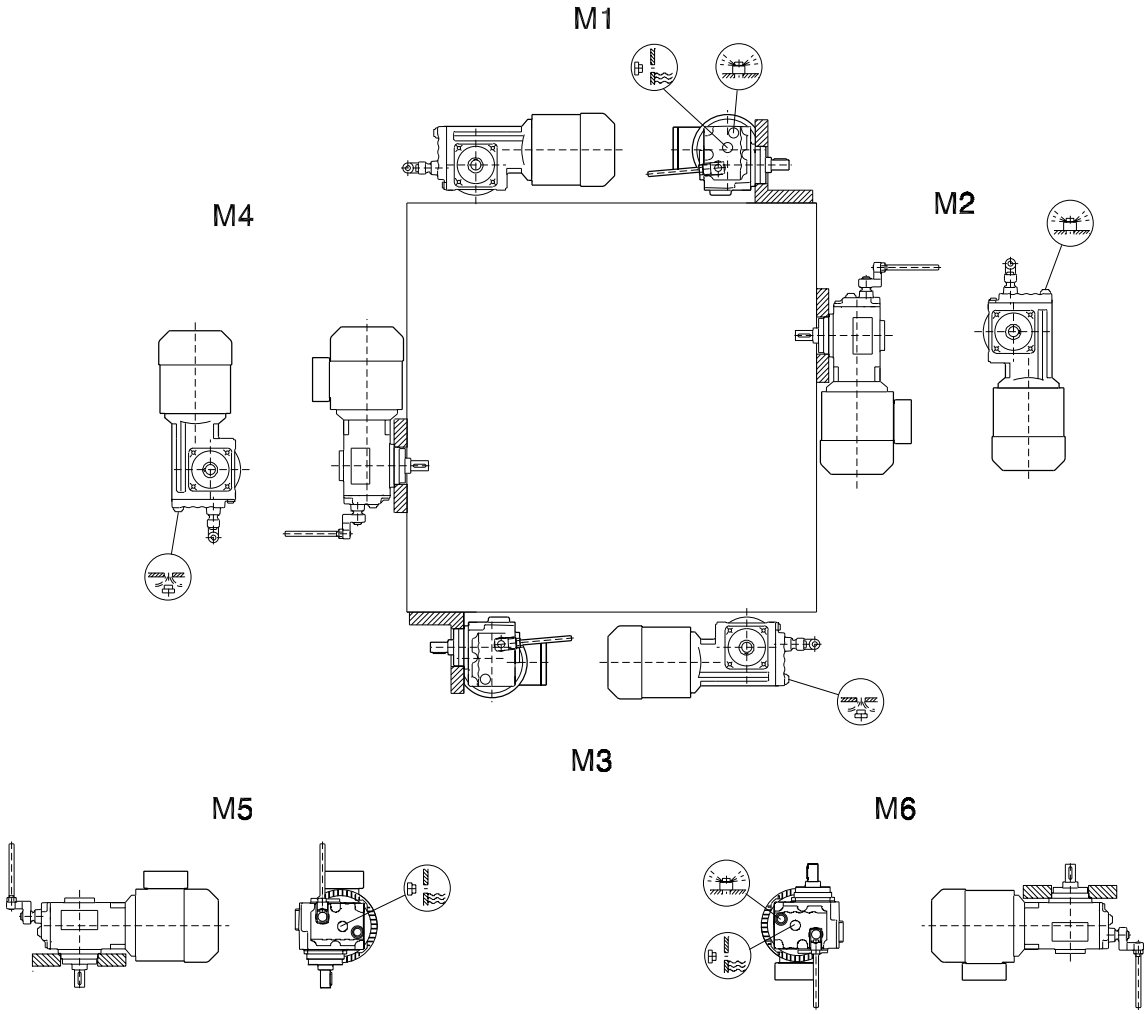


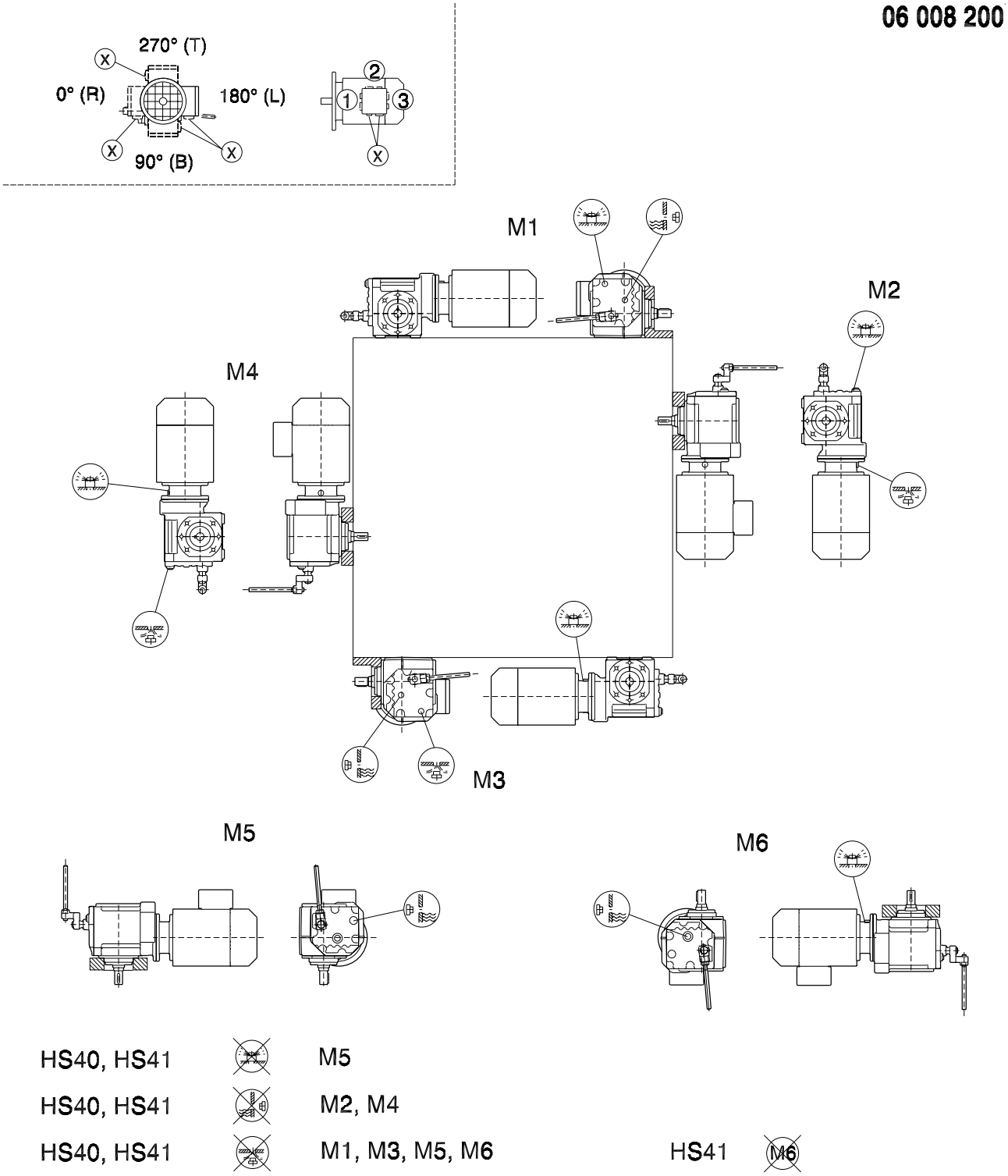


M3, M4, M5

M2, M3, M4

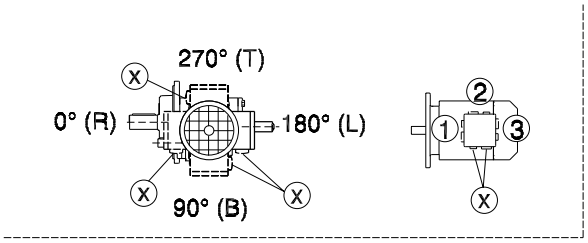
M1, M2, M5, M6

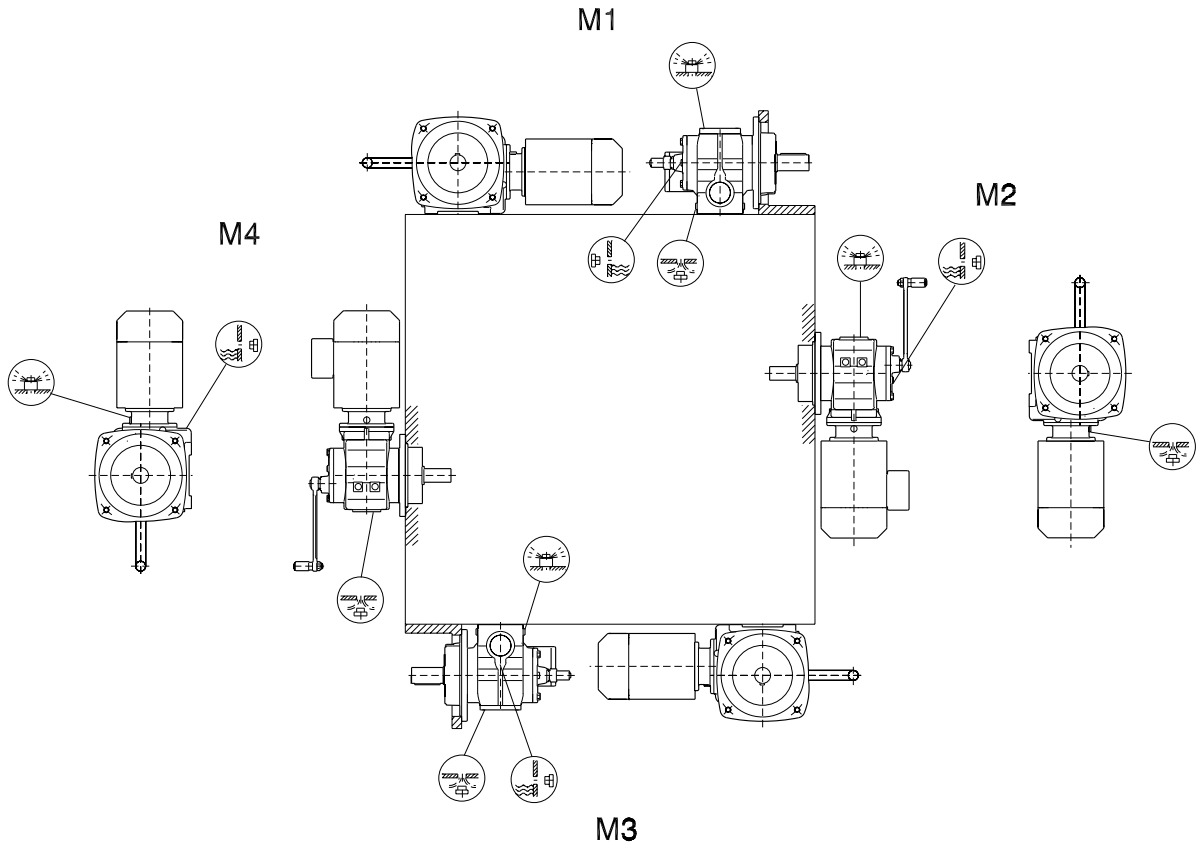
7.3 HS40 DR/DT.., HS41 DR/DT..



HS40, HS41	⊗	M5
HS40, HS41	⊗	M2, M4
HS40, HS41	⊗	M1, M3, M5, M6
HS41	⊗	M6

7.4 HS50.., HS60 DR/DT/DV..





7.5 HK30.., HK40.., HK50.., HK60 DR/DT/DV..

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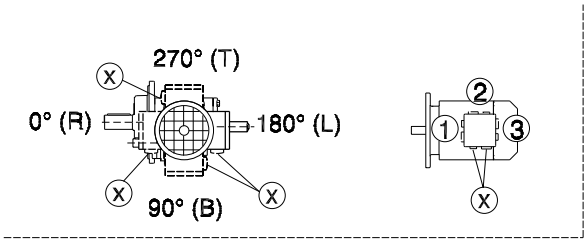

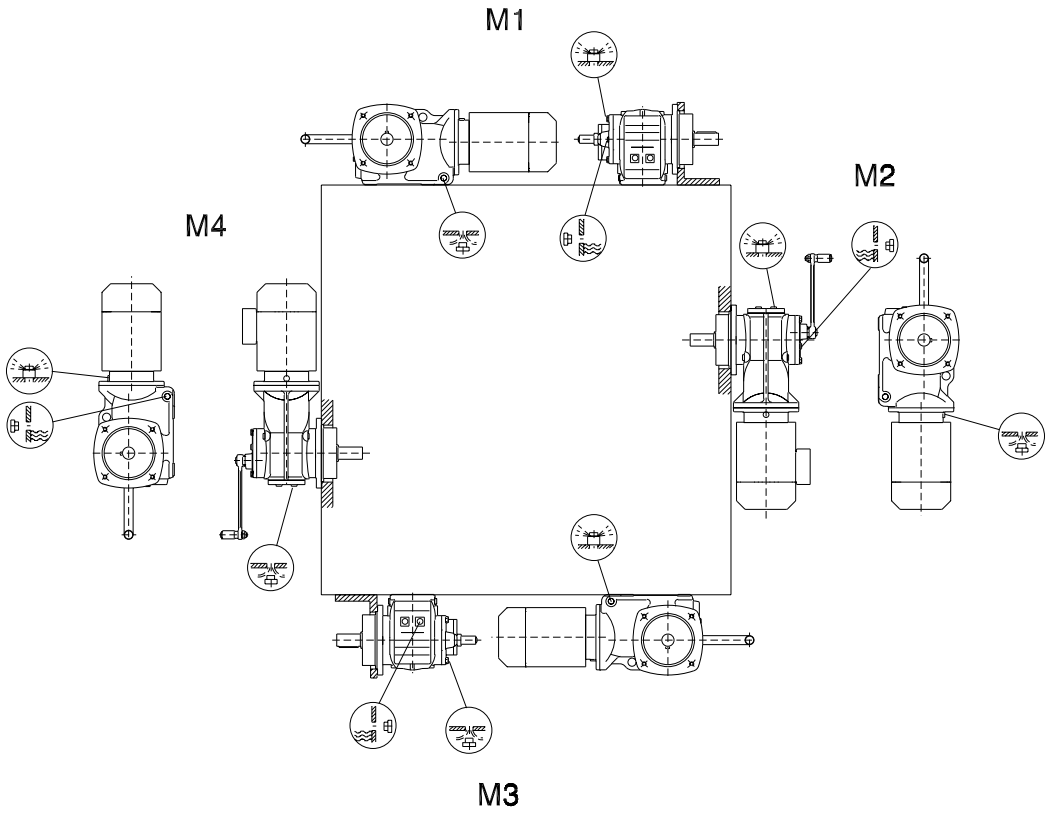

8 Lubricants

8.1 General information on lubricants

General information

Unless a special arrangement is made, SEW-EURODRIVE supplies the drives with a lubricant fill specifically for the gear unit and mounting position. The decisive factor is the mounting position (M1...M6, → Sec. "Mounting Positions") specified when ordering the drive. You must adapt the lubricant fill to any subsequent changes made to the mounting position (→ Sec." Lubricant fill quantities").

Lubricant table

The lubricant table for SEW drives on the following page shows the approved lubricants for SEW gear units. Note the following key to the lubricant table.

Key to the lubricant table

Abbreviations used, meaning of shading and notes:

CLP	= Mineral oil
CLP PG	= Polyglycol (W gear units, conforms to USDA-H1)
CLP HC	= Synthetic hydrocarbons
E	= Ester oil (water pollution danger category WGK 1)
HCE	= Synthetic hydrocarbons + ester oil (USDA - H1 certification)
HLP	= Hydraulic oil
	= Synthetic lubricant (= synthetic-based anti-friction bearing grease)
	= Mineral lubricant (= mineral-based anti-friction bearing grease)
1)	Helical-worm gear units with PG oil: please contact SEW
2)	Special lubricant for Spiroplan® gear units only
3)	Recommendation: Select SEW $f_B \geq 1.2$
4)	Note critical starting behavior at low temperatures!
5)	Low-viscosity grease
6)	Ambient temperature
	Lubricant for the food industry
	Biodegradable oil (lubricant for use in agriculture, forestry and water resources)

Anti-friction bearing greases

The anti-friction bearings in SEW gear units and motors are given a factory-fill with the greases listed below. SEW-EURODRIVE recommends regreasing anti-friction bearings with a grease fill at the same time as changing the oil.

	Ambient temperature	Manufacturer	Type
Anti-friction bearing in gear unit	-30°C ... +60°C	Mobil	Mobilux EP 2
	-40°C ... +80 °C	Mobil	Mobiltemp SHC 100
Anti-friction bearing in motor	-25°C ... +80 °C	Esso	Unirex N3
	-25°C ... +60°C	Shell	Alvania R3
	+80°C ... +100°C	Klüber	Barrierta L55/2
	-45°C ... -25°C	Shell	Aero Shell Grease 16
Special greases for anti-friction bearings in gear units:			
	-30°C ... +40°C	Aral	Aral Eural Grease EP 2
	-20°C ... +40°C	Aral Klüber	Aral Aralub BAB EP 2 Klüberbio M32-82

The following grease quantities are required:

- For fast-running bearings (motor and gear unit input end): Fill one-third of the cavities between rolling elements with grease.
- For slow-running bearings (in gear units and gear unit output end): Fill two-thirds of the cavities between rolling elements with grease.

8.2 Lubricant table

	6) °C -50 0 +50 +100	DIN (ISO)	ISO,NLGI	Mobil®	Shell		ARAL	BP	Tribol	TEXACO	Optimol	FUCHS
R...	Standard -10 +40	CLP(CC)	VG 220	Mobilgear 630	Shell Omala 220	Klüberoil GEM 1-220	Aral Degol BG 220	BP Energol GR-XP 220	Tribol 1100/220	Meropa 220	Optigear BM 220	Renolin CLP 220
K...(HK...)	-25 +80	CLP PG	VG 220	Mobil Glygolyle 30	Shell Tivela WB	Klübersynth GH 6-220	Aral Degol GS 220	BP Enersyn SG-XP 220	Tribol 800/220	Synlube CLP 220	Optiflex A 220	
	4) -40 +80	CLP HC	VG 220	Mobil SHC 630	Shell Omala 220 HD	Klübersynth EG 4-220	Aral Degol PAS 220		Tribol 1510/220	Pinnacle EP 220	Optigear Synthetic A 220	Renolin Unisyn CLP 220
	4) -40 +40		VG 150	Mobil SHC 629		Klübersynth EG 4-150				Pinnacle EP 150		
F...	-20 +25	CLP (CC)	VG 150 VG 100	Mobilgear 627	Shell Omala 100	Klüberoil GEM 1-150	Aral Degol BG 100	BP Energol GR-XP 100	Tribol 1100/100	Meropa 150	Optigear BM 100	Renolin CLP 150
	-30 +10	HLP (HM)	VG 68-46 VG 32	Mobil D.T.E. 13M	Shell Tellus T 32	Klüberoil GEM 1-68	Aral Degol BG 46		Tribol 1100/68	Rando EP Ashless 46	Optigear 32	Renolin B 46 HVI
	4) -40 +10	CLP HC	VG 32	Mobil SHC 624		Klüber-Summit HySyn FG-32				Cetus PAO 46		
	4) -40 -20	HLP (HM)	VG 22 VG 15	Mobil D.T.E. 11M	Shell Tellus T 15	Isoflex MT 30 ROT		BP Energol HLP-HM 10		Rando HDZ 15		
S...(HS...)	Standard 0 +40	CLP (CC)	VG 680	Mobilgear 636	Shell Omala 680	Klüberoil GEM 1-680	Aral Degol BG 680	BP Energol GR-XP 680	Tribol 1100/680	Meropa 680	Optigear BM 680	Renolin CLP 680
	-20 +60	CLP PG	VG 680 1)	Mobil Glygoyle HE 680		Klübersynth GH 6-680		BP Enersyn SG-XP 680	Tribol 800/680	Synlube CLP 680		
	4) -30 +80	CLP HC	VG 460	Mobil SHC 634	Shell Omala 460 HD	Klübersynth EG 4-460				Pinnacle EP 460		
	4) -40 +10		VG 150	Mobil SHC 629		Klübersynth EG 4-150				Pinnacle EP 150		
	-20 +10	CLP (CC)	VG 150 VG 100	Mobilgear 627	Shell Omala 100	Klüberoil GEM 1-150	Aral Degol BG 100	BP Energol GR-XP 100	Tribol 1100/100	Meropa 100	Optigear BM 100	Renolin CLP 150
	-25 +20	CLP PG	VG 220 1)	Mobil Glygoyle 30		Klübersynth GH 6-220			Tribol 800/220	Synlube CLP 220	Optiflex A 220	
	4) -40 0	CLP HC	VG 32	Mobil SHC 624		Klüber-Summit HySyn FG-32				Cetus PAO 46		
R...,K...(HK...), F...,S...(HS...)	4) -30 +40	HCE	VG 460		Shell Cassida Fluid GL 460	Klüberoil 4UH1-460	Aral Eural Gear 460				Optileb GT 460	
	-20 +40	E	VG 460			Klüberbio CA2-460	Aral Degol BAB 460				Optisynt BS 460	
W...(HW...)	Standard -20 +40	SEW PG	VG 460 2)			Klüber SEW HT-460-5						
	4) -40 +10	API GL5	SAE 75W90 (~VG 100)	Mobilube SHC 75 W90-LS								
	-20 +40	CLP PG	VG 460 3)			Klübersynth UH1 6-460						
R32 R302	-25 +60	DIN 51 818	00	Glygoyle Grease 00	Shell Tivela Compound A	Klübersynth GE 46-1200				Multifak 6833 EP 00		
	Standard -15 +40	5)	000 - 0	Mobilux EP 004	Shell Alvania GL 00		Aralub MFL 00	BP Energrease LS-EP 00		Multifak EP 000	Longtime PD 00	Renolin SF 7 - 041

8.3 Lubricant fill quantities

The specified fill quantities are **guide values**. The precise values vary depending on the stages and gear ratio. When filling, it is essential to check the **oil level plug since this indicates the precise oil level**.

The following table shows the lubricant fill quantities depending on the mounting position M1...M6.

Gear unit type	Fill quantity in liters					
	M1	M2	M3	M4	M5	M6
HW30	0.65	0.65	0.65	0.75	0.65	0.65
HS40	1.0	1.0	1.0	1.45	1.35	1.0
HS41	1.0	1.0	1.0	1.45	1.35	-
HS50	1.4	1.4	1.5	1.95	-	-
HS60	2.8	2.7	2.8	3.9	-	-
HK30	1.35	1.20	1.15	1.45	-	-
HK40	1.7	1.7	1.9	2.3	-	-
HK50	2.4	2.6	2.8	3.6	-	-
HK60	2.7	2.9	3.1	3.9	-	-

9 Index

9.1 Index of changes

The following amendments and changes have been made to the previous edition of the "Gear Units for Overhead Trolley Systems" operating instructions (publication number: 1052 3707, edition 07/2001):

General

- The HK30, HK50, HK60 series have been included in the operating instructions.

Sec. Mounting Positions

- All mounting position sheets have been revised.

Sec. Lubricants

- The lubricant table has been completely revised. The lubricant fill quantities have been updated and supplemented by the values for the HK30, HK50, HK60 series.

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Assembly **Sales** **Service**	**Bilbao**	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 E-48170 Zamudio (Vizcaya)	Tel. +34 9 4431 84-70 Fax +34 9 4431 84-71 sew.spain@sew-eurodrive.es

Sweden			
Assembly **Sales** **Service**	**Jönköping**	SEW-EURODRIVE AB Gnejsvägen 6-8 S-55303 Jönköping Box 3100 S-55003 Jönköping	Tel. +46 36 3442-00 Fax +46 36 3442-80 http://www.sew-eurodrive.se info@sew-eurodrive.se

Switzerland			
Assembly **Sales** **Service**	**Basel**	Alfred Imhof A.G. Jurastrasse 10 CH-4142 Münchenstein bei Basel	Tel. +41 61 41717-17 Fax +41 61 41717-00 http://www.imhof-sew.ch info@imhof-sew.ch

Thailand			
Assembly **Sales** **Service**	**Chon Buri**	SEW-EURODRIVE (Thailand) Ltd. Bangpakong Industrial Park 2 700/456, Moo.7, Tambol Donhuaroh Muang District Chon Buri 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.co.th

Tunisia			
Sales	**Tunis**	T. M.S. Technic Marketing Service 7, rue Ibn EI Heithem Z.I. SMMT 2014 Mégrine Erriadh	Tel. +216 1 4340-64 + 1 4320-29 Fax +216 1 4329-76

Turkey			
Assembly **Sales** **Service**	**Istanbul**	SEW-EURODRIVE Hareket Sistemleri Sirketi Bagdat Cad. Koruma Cikmazi No. 3 TR-81540 Maltepe ISTANBUL	Tel. +90 216 4419163 + 216 4419164 + 216 3838014 Fax +90 216 3055867 sew@sew-eurodrive.com.tr

USA			
Production **Assembly** **Sales** **Service**	**Greenville**	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Manuf. +1 864 439-9948 Fax Ass. +1 864 439-0566 Telex 805 550 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly **Sales** **Service**	**San Francisco**	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, California 94544-7101	Tel. +1 510 487-3560 Fax +1 510 487-6381 cshayward@seweurodrive.com
	Philadelphia/PA	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 467-3792 csbridgeport@seweurodrive.com
	Dayton	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 440-3799 cstroy@seweurodrive.com
	Dallas	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Additional addresses for service in the USA provided on request!		

Venezuela			
Assembly **Sales** **Service**	**Valencia**	SEW-EURODRIVE Venezuela S.A. Av. Norte Sur No. 3, Galpon 84-319 Zona Industrial Municipal Norte Valencia, Estado Carabobo	Tel. +58 241 832-9804 Fax +58 241 838-6275 sewventas@cantv.net sewfinanzas@cantv.net

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